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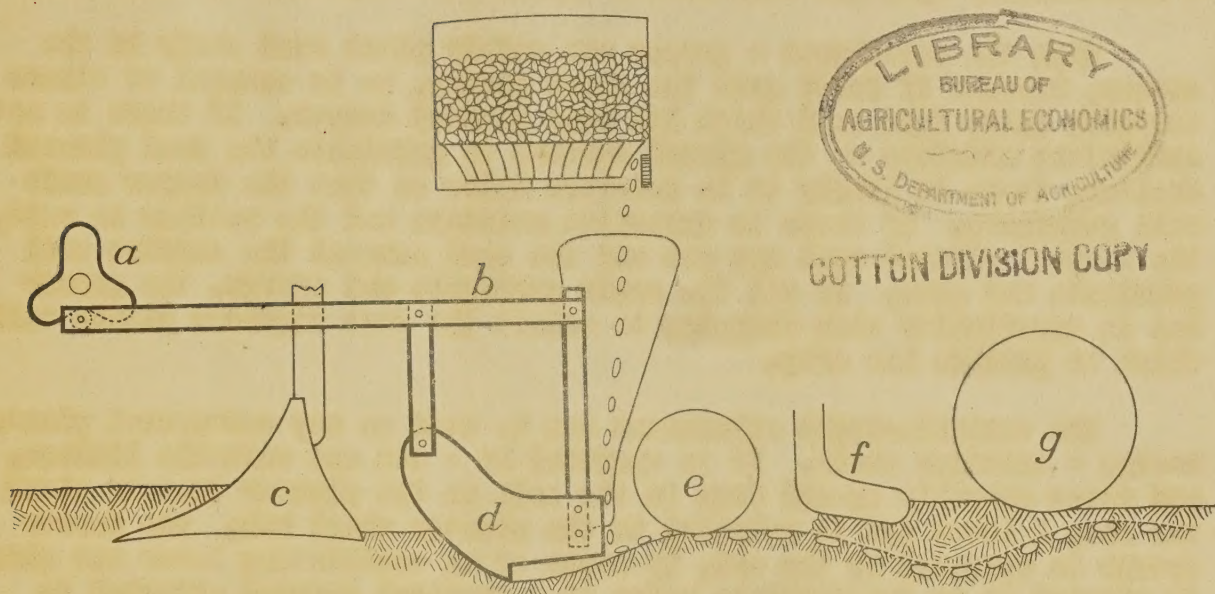




United States Department of Agriculture  
Bureau of Agricultural Engineering  
Division of Mechanical Equipment

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## VARIABLE-DEPTH COTTON PLANTER



A, cam on hub of planter wheel; b, lever arm; c, sweep for making level seed bed; d, variable-depth furrow opener; e, seed press wheel; f, covering spoons; g, open surface press wheel

Cotton growers throughout the South because of weather and soil conditions are often compelled to plant seed three or four times before getting a stand of plants when they use the conventional constant-depth planting method.

When a grower starts planting cotton he hopes the depth at which he decides to place the seed will be the best for germination and growth of plants. When he misses the mark he is compelled to replant.

The yield of a cotton plant depends in large measure upon the vigor of its young seedling. A continuously accelerated growth is largely dependent upon rapid seed germination and upon the first roots being favorably located for growth. No method of seed-bed preparation or of seed planting gives assurance of a full, strong stand of seedlings, but under favorable conditions any of the ordinary methods gives good results. Seldom, however, do favorable or ideal conditions prevail for germination and growth.



Watching farmers replant their fields and realizing that the extra time and expense entailed must come out of their profits, John W. Randolph of the U. S. Bureau of Agricultural Engineering, was prompted to develop a planter that would insure a stand of cotton in one planting. He accordingly designed a variable-depth planter attachment which is essentially a mechanically operated seed-furrow opener that replaces the fixed type.

With the attachment a grower can safely plant seed early in the season, because if frost gets the first plants, he is assured of others emerging later from seed which has been planted deeper. If there is not sufficient moisture at the ground surface to germinate the seed planted shallow, there is likely to be moisture below so that the deeper seeds will germinate. If there is excessive moisture and the weather is cold, the deepest planted seed may rot and the seed nearest the surface will germinate and grow. If all the seeds germinate and emerge, the grower has an opportunity when chopping to select the most vigorous plants with which to produce his crop.

The variable-depth attachment can be used on any commercial planter having a traction wheel. It is operated by a cam and suitable linkage, and moves smoothly up and down in the soil as the planter travels along the row. A lobed cam is attached to the planter wheel hub. The furrow opener is operated by the cam, by means of an oscillating lever arm which is pivoted at an intermediate point to a vertical support attached to the planter. A spring, with tension-adjusting members, holds the oscillating lever arm in contact with the cam. The attachment is illustrated in the accompanying figure.

The seeds are dropped upon the gently undulating surface of the furrow bottom. The seeds are planted from the surface of the ground to as much as 2 inches deep. No two successive seeds are planted at the same depth. Fertilizer placements can be made simultaneously with the planting of seed.

The attachment is also adapted to planting of all small seeds, the plants from which, when grown, can be thinned at given distances. It may be used for cucumber, cantaloupe, mangel-wurzel, and sweet corn for early markets. A grower of cantaloupes used it last season with satisfactory results in planting a large acreage.

Several cotton growers are using the new attachment and are pleased with its performance and with the results obtained.

A public patent has been obtained on the machine and several manufacturers have embodied its principle in their planters. It is estimated that the attachment will be worth thousands of dollars in time and expense in eliminating the necessity for replanting cotton and other row crops.

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